REMARKS

Claims 1-46 were pending at the time of the Office Action. Claims 27-34 were deemed to be allowed. Claims 16 and 23 are amended herein to improve readability thereof, and claim 19 is also amended herein. Claims 47-60 are new. Accordingly, claims 1-26 and 35-60 are pending in the present application.

Allowable Subject Matter

Applicant gratefully acknowledges the indication in the Office Action that claims 27-34 are allowable over the prior art of record. Claims 27-34 remain in the application in their allowed form.

Applicant also gratefully acknowledges the indication in the Office Action that claims 19 and 23 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, claim 19 has been rewritten in independent form. (Claim 19 has also been amended to improve readability thereof.) Therefore, claim 19 is believed to be allowable. Claim 23 depends from claim 19. Because claim 19 is believed to be allowable, claim 23 is also believed to be allowable.

§ 103 Rejections

Claims 1-18, 20-22, 24-26 and 35-46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Conti (U.S. Patent No. 6,577,284) in view of Seward et al. (U.S. Patent No. 6,107,972). These rejections are respectfully traversed.

Conti describes a field antenna for induction borehole logging, the antenna to be lowered into a borehole for measuring electrical characteristics of geological formations. Conti's antenna is designed to receive or transmit three components of low frequency magnetic fields, and yet be slim enough to fit inside of a borehole (see Conti, col. 1, l. 65 to col. 2, l. 2). Conti describes antennas as being employed by transmitters (where all three windings are energized by the transmitter to produce low frequency fields) and by receivers (where all three windings detect magnetic fields). In the context of borehole logging, a transmitter and a receiver are spaced apart within a borehole during operation.

Amendments to the Drawings:

Fig. 5 has been amended to correct two reference numbers and to insert two reference numbers, the amendments conforming with Paragraphs 39 and 41-43 of Applicant's written description.

Conti uses three orthogonally-directed windings 12, 14 and 16 on his antenna to provide multiple orientations of a transmitter dipole, for measurements of inhomogeneous geological media. According to Conti, prior vertical solenoid antennas lie in a horizontal plane and are sensitive to resistivity parallel to the bedding planes, but are not capable of detecting magnetic fields in an inhomogeneous media (see Conti, col. 1, ll. 52-62).

In contrast, Seward et al. describes a multi-band antenna for AM/FM, CB and cellular communications. Seward et al. employs multiple coils, but each are oriented in the same direction (see Seward et al., Fig. 1). A multiplexer 103 is used to selectively (and individually) interface the multiple apparatuses (AM/FM, CB and cellular receivers) with the antenna.

The combination of a field antenna for induction borehole logging described by Conti and a multiplexer in a multi-band antenna system as described by Seward et al. would not have been obvious to one of ordinary skill in the art. First, as further explained below, neither Conti nor Seward et al. provides motivation to connect Sewart et al.'s multiple apparatuses (AM/FM, CB and cellular receivers) to Conti's multi-directional antenna designed to transmit or receive geological measurement signals in multiple directions for measuring of inhomogeneous geological structures. Second, as also further explained below, neither Conti nor Seward et al. provides motivation to use Seward et al.'s multiplexer to allow the windings of Conti's antenna to operate for transmission and reception.

First, Conti discloses an antenna that includes three orthogonal windings, where the only disclosed purpose of the orthogonal orientation of the three windings is to allow measurement of inhomogeneous geological media with respect to borehole logging. Because borehole logging neither requires nor involves transmitting signals to devices such as AM/FM radios, CB radios, cellular devices and the like, one skilled in the art would not find reason to selectively connect Seward et al.'s multiple apparatuses (AM/FM, CB and cellular receivers) to Conti's antenna, designed to measure geological resistivity in a borehole. In this first regard, one of ordinary skill in the art would not have found it obvious to employ Seward et al.'s multiplexer with Conti's antenna, to provide different radio frequency signals for transmitting and receiving, as suggested in the Office Action.

Second, Conti's system is designed to employ a receiver and a separate transmitter, the receiver and the transmitter spaced apart within the borehole (see Conti, col. 1, ll. 38-39). An antenna is employed at the transmitter, and a separate antenna is employed at the receiver (see Conti, col. 3, lines 29-30). On the antenna employed at the receiver, the windings of the antenna are shielded from each other (see Conti, col. 3, lines 22-25), further distinguishing the antenna employed at the transmitter from the antenna employed at the receiver. In this second regard, one of ordinary skill in the art would not have found it obvious to employ Seward et al.'s multiplexer with Conti's antenna to allow separate windings on the same antenna to operate for transmission and reception, as apparently suggested in the Office Action.

Applicant notes that Conti provides as follows: "Although the foregoing antenna 109 has been discussed with respect to borehole logging, it should be understood that the antenna may be employed in any transceiver system" (see Conti, col. 3, ll. 32-34). However, the only disclosed useful purpose for Conti's multiple-winding antenna is in connection with measuring inhomogeneous geological media, not for multi-band communication devices. As previously explained, Conti teaches that a single winding disposed along a single plane measures the resistivity of a geological formation that is present along only a single axis. The problem posed in Conti arises because most formations of interest are inhomogeneous – that is, the electrical characteristics of the formation that are present along one axis are unique from those that are present along another axis. Conti solves this problem by disposing three windings orthogonal to each other in order to detect magnetic fields in inhomogeneous media, each winding measuring resistivity of the media along a unique axis. Thus, the noted feature of Conti's antenna addresses a problem commonly arising in the context of borehole logging.

However, the noted features of Conti's antenna do not solve a problem that would commonly arise in the context of multi-band communications. Seward et al. discloses two problems that do commonly arise in the multi-band context: 1) designing an antenna for receiving frequencies in multiple frequency bands (see Seward et al., col. 1, ll. 30-31) and 2) minimizing mismatch effects between the antenna and the multiple apparatuses (e.g. AM/FM, CB and cellular receivers) (see Seward et al. col. 1, ll. 64-67). To solve these two problems, Seward et al. respectively teaches 1) forming a single, continuous antenna wire with a plurality of

self-resonant circuits and 2) designing a multiplexer to provide multiple frequency-dependent impedance paths between the antenna and the multiple apparatuses (AM/FM, CB and cellular receivers). In contrast, Seward et al. does not disclose requiring an antenna to be disposed along a given orientation. Furthermore, the noted problem does not commonly arise in the context of a multi-band communications system. Because the prior art fails to teach of any useful purpose of using Conti's multiple-winding antenna in the context of multi-band communications, it would not be obvious to one skilled in the art to combine Conti's borehole logging antenna with Seward et al.'s multiplexer.

At least for the above reasons, Applicant respectfully submits that the Patent and Trademark Office has not made out a *prima facie* case of obviousness under the provisions of 35 U.S.C. § 103 and that the rejections of claims 1-18, 20-22, 24-26 and 35-46 must be withdrawn.

At least by virtue of their dependency from claims 1 and 35, respectively, it is believed that claims 47-53 and 54-60 are also patentable over Conti and Seward et al.

Claim 47 depends from claim 1. Claim 47 further recites that both the first and the second windings generate magnetic fields in response to a same data signal (see Paragraph 31 of Applicant's written description). Conti does not disclose that the windings of an antenna employed at the transmitter generate magnetic fields in response to a same data signal. Similarly, Seward et al. does not disclose that the coils of its multi-band antenna generate magnetic fields in response to a same data signal. Thus, it is further believed that claim 47 is patentable over the cited references. Claim 54 recites similar features. Thus, it is also further believed that claim 54 is patentable over the cited references.

Claim 48 depends from claim 47. Claim 48 further recites that "the data signal is sent to the first winding and to the second winding simultaneously" (see Paragraph 32 of Applicant's written description). As previously explained, neither Conti nor Seward et al. discloses that multiple windings generate magnetic fields in response to the same data signal. Furthermore, neither cited reference discloses sending the same data signal to the multiple windings simultaneously. Thus, it is further believed that claim 48 is patentable over the cited references.

Claim 55 recites similar features. Thus, it is also further believed that claim 55 is patentable over the cited references.

Claim 49 also depends from claim 47. Claim 49 further recites that "the data signal is sent to the first winding at a first time and to the second winding at a second time different from the first time" (see Paragraph 31 of Applicant's written description). As previously explained, neither Conti nor Seward et al. discloses that multiple windings generate magnetic fields in response to the same data signal. Furthermore, neither cited reference discloses sending the data signal to the first winding at a first time and to the second winding at a second time. Thus, it is further believed that claim 49 is patentable over the cited references. Claim 56 recites similar features. Thus, it is also further believed that claim 56 is patentable over the cited references.

Claim 50 depends from claim 1. Claim 50 further recites that both the first and the second windings receive the magnetic field relating to the same information transmitted by a single source (see Paragraphs 5, 32 and 61 of Applicant's written description). In contrast, Conti discloses receiving three different components of magnetic fields, each component relating electrical resistivity along a unique axis and each component received by a unique winding of the antenna. Thus, Conti does not disclose receiving the same information at each winding. Further, receiving the same information would not solve the problem posed in Conti with respect to measuring electrical characteristics of inhomogeneous media. The individually-tuned coils of Seward et al.'s multi-band antenna also do not receive the same information. Thus, it is further believed that claim 50 is patentable over the cited references. Claim 57 recites similar features. Thus, it is also further believed that claim 57 is patentable over the cited references.

Claim 51 depends from claim 50. Claim 51 further recites that "the activation circuitry activates only one of the first winding and the second winding at a time to receive the magnetic field" relating to the same information (see Paragraph 31 of Applicant's written description). Neither Conti nor Seward et al. discloses activating only one of the multiple winding to receive a magnetic field relating to the same information. Thus, it is further believed that claim 51 is patentable over the cited references. Claim 58 recites similar features. Thus, it is also further believed that claim 58 is patentable over the cited references.

Claim 52 also depends from claim 50. Claim 50 further recites that "the activation circuitry activates both the first winding and the second winding to receive the magnetic field" and that "a stronger of the received magnetic field at the first winding and the received magnetic field at the second winding is chosen for processing" (see Paragraph 32 of Applicant's written description). Neither Conti nor Seward et al. teaches selecting a stronger of multiple received magnetic fields. Thus, it is further believed that claim 52 is patentable over the cited references. Claim 59 recites similar features. Thus, it is also further believed that claim 59 is patentable over the cited references.

Claim 53 depends from claim 1. Further, claim 53 recites that "the first core is disposed on an implantable unit configured for implantation in a body of a medical patient." Neither Conti nor Seward et al. teaches disposing the core on an implantable medical device. Thus, it is further believed that claim 53 is patentable over the cited references. Claim 60 recites similar features. Thus, it is also further believed that claim 60 is patentable over the cited references.

Conclusion

In view of the forgoing, it is believed that the application is in condition for allowance. Reexamination and reconsideration of the application are requested. If the Examiner believes that the application is not in condition for allowance for any reason, the Examiner is requested to contact the undersigned attorney at the Los Angeles telephone number (310) 975-7963, to discuss steps that the Examiner may believe are needed to place the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 05-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit

Account No. 05-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 05-0872.

Respectfully submitted,

Date: April 11, 2005

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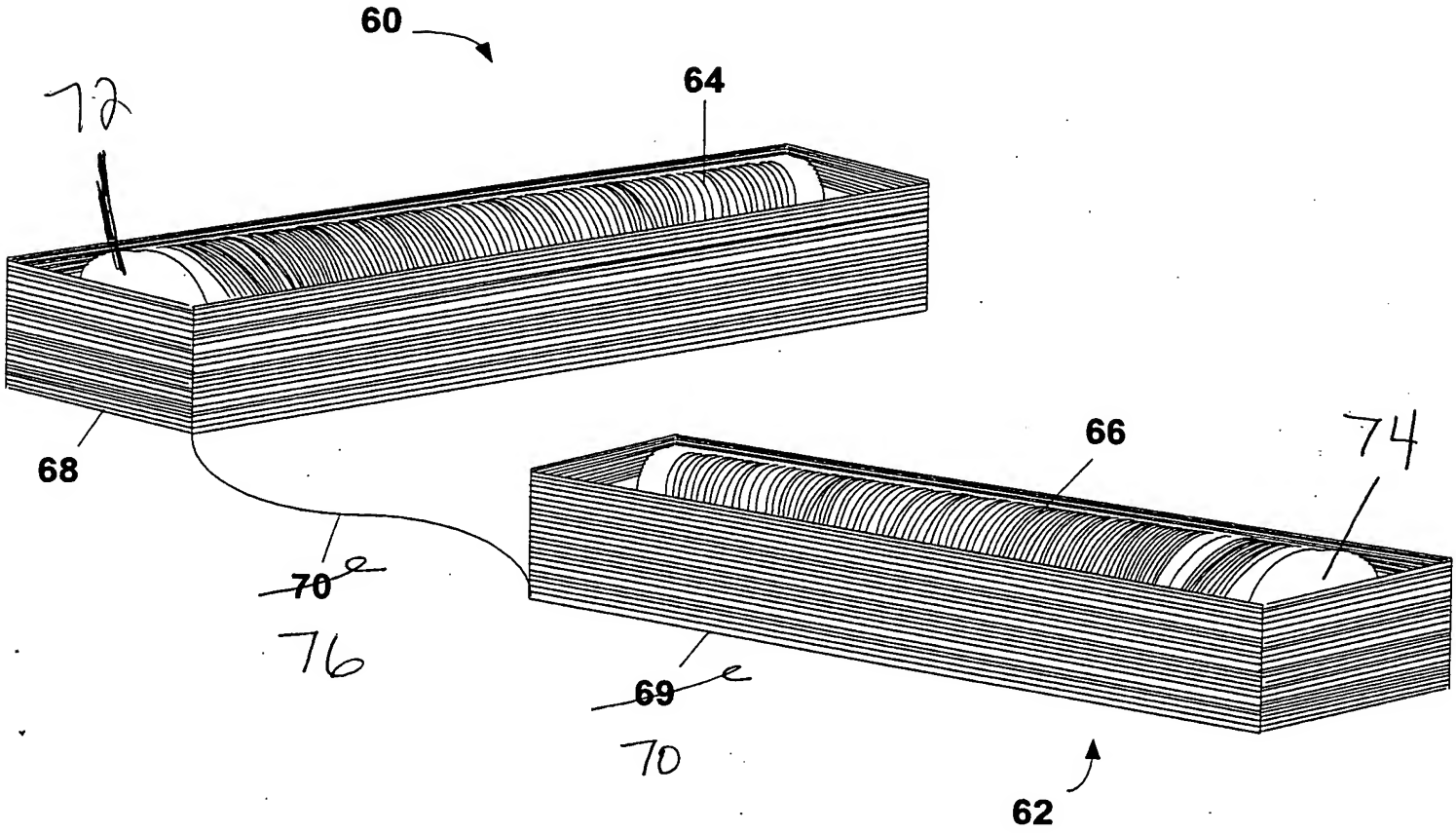

Fig. 5